Regarding "Infected femoral artery pseudoaneurysm in drug addicts: The beneficial use of the internal iliac artery for arterial reconstruction"

I read with great interest the article by Klonaris et al[1] and congratulate them for their excellent results on the surgical treatment of infected femoral artery pseudoaneurysms in drug addicts.[1] Surgical treatment options for femoral artery infected false aneurysms (fa-IFAs) in drug abusers have been extensively described in the literature.[2,3] Although there is no consensus statement for the ideal surgical approach, most recent reports support sole ligation-excision of the aneurysm and eradication of local sepsis.[3,4] However, there is no level I evidence to support these practices.[3] Klonaris et al presented excellent results in 9 of 14 patients with fa-IFAs, adopting the use of the internal iliac artery, as a patch or conduit, for lower limb revascularization.[1] It is one of the few articles in the English literature supporting immediate revascularization in the setting of fa-IFAs in drug addicts. This new approach in the field of aneurysmal disease in drug addicts supports our recommendation for revascularization procedures in this population.[5]

Our recent review raised concerns regarding the increased incidence of severe claudication and disability in most drug addicts not receiving revascularization.[3] Ligation-excision of a fa-IFA as a sole procedure increases the risk of limb ischemia and subsequent limb loss, and long-term claudication is common. We found an overall late amputation rate approaching 6.5% with sole fa-IFA ligation. Consequently, mild or severe claudication is expected in up to 44.3% of cases. I can hardly expect drug addicts, especially those continuing injection of illicit drugs, certainly with limited physical activities, to attend any exercise rehabilitation program. Therefore, improvement of pain-free distance is not a possible scenario in most of these patients. This disabling claudication necessitates late revascularization in most patients.[2] Surprisingly, a recent report supporting ligation of femoral vessels mentioned claudication and amputation rates up to 25%.[4] We certainly agree with Klonaris et al in that stable claudication symptoms may not be innocent in young addicts[1]; thus, the thesis of producing claudicant addicts must be reappraised and not be the rule. The fate of occasional trauma or perivascular inflammatory reactions may be disastrous in a lower limb lacking adequate blood perfusion.[1] Furthermore, severe claudicants lose the opportunity to regain a normal life free of injection of recreational drugs.[3] The ability to walk properly is of great importance in this social group in order to regain lost daily physical activity and also to improve health-related quality of life. With a view not only toward limb salvage, but also toward limb functionality, possibly sole ligation-excision of a fa-IFA is not the optimal solution, as previously believed.

Conversely, late infection and amputation rates approach 32.5% and 11.3%, respectively, in routine revascularization. Aneurysm ligation-excision with observation and selective revascularization in those limbs that seem in danger of critical ischemia yields approximately the same late amputation rate (12.6%).[3] However, Klonaris et al performed in situ reconstructions with biological grafts (mainly internal iliac artery) with no amputation or claudication. We had similar results but used short or long segments of the great saphenous vein, sometimes in the form of a sequential bypass.[5] We have only one concern regarding the use of the internal iliac artery for bypass. How many of the six patients with ipsilateral internal iliac artery interruption presented by Klonaris et al had sexual dysfunction on late follow-up? Certainly, the patency of the contralateral internal iliac artery reduces the possibility of this complication, but in a drug addict, collaterals in the pelvic and buttock region may not be sufficient, especially in large aneurysms, hematomas, or abscesses extending to the retroperitoneum. Furthermore, the amount of collateral formation does not predict later pelvic ischemia.

We recently stated that in an environment with the lowest risk of graft infection according to operative findings, especially if common femoral artery or femoral bifurcation is involved, routine vein reconstruction is acceptable. This thesis can be expanded after the report of Klonaris et al saying that biological grafts used as revascularization materials are justified in drug addicts presented with complicated fa-IFAs, to rule out the possibility of disabling claudication in young patients.

In conclusion, the current option of the sole ligation of a fa-IFA in a drug addict, the most common current surgical policy, should probably be reappraised after Klonaris and associates' article reporting zero morbidity of the affected limb.

George S. Georgiadis, MD

Department of Vascular Surgery
"Demokritos" University Hospital
Alexandroupolis, Greece

REFERENCES

1. Klonaris C, Katsargyris A, Papapetrou A, Vourliotakis G, Tsiodras S, Georgopoulos S, et al. Infected femoral artery pseudoaneurysm in drug addicts: the beneficial use of the internal iliac artery for arterial reconstruction. J Vasc Surg 2007;45:498-504.
2. Yegane RA, Salehi NA, Ghaseminegad A, Bahrami F, Bashashati M, Ahmadi M, et al. Surgical approach to vascular complications of intravenous drug abuse. Eur J Vasc Endovasc Surg 2006;32:397-401.
3. Georgiadis GS, Lazarides MK, Polychronidis A, Simopoulos C. Surgical treatment of femoral artery infected false aneurysms in drug abusers. Aust N Z J Surg 2005;75:1005-10.
4. Naqi SA, Khan HM, Akhtar S, Shah TA. Femoral pseudoaneurysm in drug addicts—excision without revascularization is a viable option. Eur J Vasc Endovasc Surg 2006;31:585-7.
5. Georgiadis GS, Bessias NC, Pavlidis PM, Pomoni M, Batakis N, Lazarides MK. Infected false aneurysms of the limbs secondary to chronic intravenous drug abuse: analysis of perioperative considerations and operative outcomes. Surg Today (in press).

doi:10.1016/j.jvs.2007.04.065

Reply

We much appreciate the comments of Georgiadis and colleagues regarding our article on the use of the internal iliac artery for arterial reconstruction in drug addicts with infected femoral pseudoaneurysms. Ligation of the femoral artery alone without revascularization is a common clinical practice that provides short-term safety; however, its mid- and long-term efficacy is often compromised because it frequently leads to claudication and even amputation. Therefore, in our opinion, immediate revascularization should be attempted in all these patients, most of whom are young.

With such a perspective, we decided to use the internal iliac artery either as a conduit or a patch, because it is an autologous tissue with inherent advantages, especially when placed in an infected surgical field—as is usually the case when dealing with femoral pseudoaneurysms secondary to intravascular drug abuse. We agree with Georgiadis and colleagues that the great saphenous vein can also be used for arterial reconstruction, but in these patients it is seldom available. Furthermore, even in cases for which the great saphenous vein has not been damaged by chronic direct injections and can be used, we still believe that the internal iliac artery may be preferable for the reasons described in our original article.

An interesting issue brought up in their letter is the possible consequences of internal iliac artery interruption in sexual function. Existing data suggest that there is a weak correlation between postoperative sexual dysfunction and hypogastric circulation, and the preservation of the hypogastric nerve plexus seems more important than preservation of internal iliac artery blood flow.[1] In a series of patients who underwent internal iliac artery coil embolization for endovascular treatment of abdom-

inal aortic aneurysms, only 2.6% experienced erectile dysfunction.[2] It is interesting to note that none of the patients who underwent bilateral internal iliac artery interruption experienced any sexual function change. These results imply a relatively innocent role of internal iliac artery interruption in sexual dysfunction; however, they refer to older patients with increased collateral circulation secondary to aortoiliac aneurysmal or occlusive disease; thus, they do not safely extrapolate the effect of ipsilateral internal iliac artery interruption in sexual function of drug abusers who are usually younger and without progressed atherosclerosis or significant collateralization.

Additionally, assessment of the influence of internal iliac artery interruption in sexual function of drug abusers is further restrained by some distinct characteristics of their sexual life. Sexual disorders often pre-exist in these patients and may lead to drug use and addiction.[3] Moreover, drug abuse has been reported to adversely affect sexual behavior[4]; diminished libido and impaired sexual performance are common sequelae of chronic use of opiates, probably through neuroendocrine and other mechanisms.[5] Therefore, it seems that sexual dysfunction in drug abusers is a complex entity with psychological, neuroendocrine, and other backgrounds, thus making the isolated evaluation of the angiogenic factor problematic.

In our series, the internal iliac artery was harvested in nine patients with meticulous nerve-sparing dissection to avoid transection of the hypogastric nerve plexus. In three of them, we reconstructed the internal iliac artery with end-to-end anastomosis of its proximal and distal segments, whereas in six patients the ipsilateral internal iliac artery was interrupted. None of these nine patients reported any change in sexual function in the late follow-up period after the operation when asked directly; however, objective measurements of penile blood flow were not obtained.

Undoubtedly, preservation of intact sexual function is of great importance in the young population of drug addicts. In our opinion, interruption of the ipsilateral internal iliac artery performed with a hypogastric plexus–sparing technique does not pose a significant risk of sexual dysfunction, and it provides excellent results in terms of limb salvage and functionality.

Chris Klonaris, MD
Athanasios Katsargyris, MD
Athanasios Giannopoulos, MD
Elias Bastounis, MD

Athens University Medical School
Athens, Greece

REFERENCES

1. Ohshiro T, Kosaki G. Sexual function after aorto-iliac vascular reconstruction. Which is more important, the internal iliac artery or hypogastric nerve? J Cardiovasc Surg (Torino) 1984;25:47-50.
2. Criado FJ, Wilson EP, Velazquez OC, Carpenter JP, Barker C, Wellons E, et al. Safety of coil embolization of the internal iliac artery in endovascular grafting of abdominal aortic aneurysms. J Vasc Surg 2000;32:684-8.
3. La Pera G, Franco Giannotti C, Taggi F, Macchia T. Prevalence of sexual disorders in those young males who later become drug abusers. J Sex Marital Ther 2003;29:149-56.
4. Palha AP, Esteves M. A study of the sexuality of opiate addicts. J Sex Marital Ther 2002;28:427-37.
5. Mirin SM, Meyer RE, Mendelson JH, Ellingboe J. Opiate use and sexual function. Am J Psychiatry 1980;137:909-15.

doi:10.1016/j.jvs.2007.04.064

Regarding "State-of-the-art treatment of chronic leg ulcers: A randomized controlled trial comparing vacuum-assisted closure (V.A.C.) with modern wound dressings"

We have read with interest the article by Vuerstaek et al.[1] The study must be praised in its effort to accurately assess the efficacy of vacuum-assisted closure (VAC) therapy in leg ulceration. However, we have concerns regarding the methodology and, therefore, the study's conclusions.

Although the study uses patient randomization and independent observers, a robust methodology is paramount when a commercially sponsored therapy cannot be blinded to its participants. The methodology states that underlying arterial and venous insufficiency was dealt with prior to study inclusion. However, one of the three subgroups, "combined ulcers," contains limbs with ankle-brachial pressure index values of 0.6 to 0.85. Furthermore, because of an insufficient number of patients, no statistical analysis of subgroup data was performed.

Body mass index and lower-limb edema are associated with leg ulceration and may influence wound exudate.[2] These data, which are not presented, would be of particular importance in the arteriolosclerotic group with no underlying arterial or venous disease.

The baseline characteristics demonstrate a median ulcer area in the VAC group of 33 cm^2 (range, 2-150 cm^2), compared with control values of 43 cm^2 (range, 3-250 cm^2). In the statistical analysis of the determinants of wound-healing duration, this difference in areas is just short of significance at $P = .058$. A control group population with larger ulcers would require greater re-epithelialization and more skin grafting.

The primary end-point measurement is time to complete epithelialization, subdivided into two phases: the wound preparation time after debridement and the time to complete healing after skin application. Critical to the difference in median healing times (VAC, 29 days; control, 45 days) is the delayed application of skin in the control group (VAC, 7 days; control, 17 days). The methodology states that 100% granulation and minimal exudate was required during wound preparation before skin grafts were applied. The results of the trial are therefore influenced greatly by the assessment of these two parameters by two observers. The amount of wound exudate would normally be estimated by inspection of dressings, and this was not possible in the VAC group.[3] It is unclear whether both observers assessed all wounds, whether they were independent of each other, and, if so, whether the results were in concordance.

Furthermore, we deduce from the results that median healing times after skin application were similar for both groups (VAC, 22 days; controls, 28 days) despite better initial skin graft survival in the VAC group.

Complication rates, including cutaneous damage, were higher in the VAC group vs controls (40% vs 23%; not statistically significant). However, this analysis would be altered if the two patients in the control group with bleeding from donor sites, complications not related to recipient ulcers or differences in therapy, were omitted.

Muhammad Ahmed, MBBS, FCPS, FRCS
Tereza Soskova, MUDr
Dean T. Williams, MD, FRCS

Department of Vascular Surgery
Ysbyty Gwynedd
Bangor, United Kingdom

REFERENCES

1. Vuerstaek JDD, Vainas T, Wuite J, Nelemans P, Neumann MHA, Veraart JCJM. State-of-the-art treatment of chronic leg ulcers: a randomized controlled trial comparing vacuum-assisted closure (V.A.C.) with modern wound dressings. J Vasc Surg 2006;44:1029-38.